DOCUMENT RESUME

ED 041 340 CG 005 685

AUTHOR	Lunneborg, Patricia W.
TITLE	Prediction of Post-High School Educational Experiences from an Aptitude/Achievement Test Battery.
INSTITUTION	Washington Univ., Seattle. Bureau of Testing.
PUB DATE	70
NOTE	16p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$0.90
DESCRIPTORS	*Academic Achievement, Admission Criteria, College Admission, *College Students, *Disadvantaged Youth, Individual Characteristics, Minority Groups, Negro Students, Performance, *Prediction, *Special Programs

ABSTRACT

This study is the third in a series to assess the relationship between educational criteria other than grades and the Washington Pre-College (WPC) test battery. Five hundred and ninety-seven returned questionnaires from Seattle-area schools provided post-high school educational criteria to be correlated with WPC test scores and high school grades. Consistent with earlier studies such nonintellective, nongraded outcomes of the educational experience cannot be predicted from the measures currently used to predict college scores. In another approach to the problem, a group of 46 males and 32 females who entered the University of Washington in the fall of 1968 as part of a special minority group program were compared with a matched group of 49 males and 34 females. Although admitted through normal procedures their performance on the WPC had indicated they were high-risk. After three semesters their scholastic performance was compared. Those in the special minority program did far better than their WPC scores had predicted while the matched group did as expected. However, the achievement of the minority group covered a wide range and suggested that the effects of the program may be highly variable in terms of individual students. (Author/KH)

ED041340

Prediction of Post-High School Educational Experiences from an Aptitude/Achievement Test Battery

Patricia W. Lunneborg

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Bureau of Testing
University of Washington—Seattle

CG 005 685

ED041340

Bureau of Testing

University of Washington

May 1970

Prediction of Post-High School Educational Experiences from an Aptitude/Achievement Test Battery

Patricia W. Lunneborg

This study is the third in a series to assess the relationship between educational criteria other than grades and the Washington Pre-College battery. The 597 returned mail questionnaires of the 2,150 sent Seattle-area 1965 high school graduates provided the post-high school educational criteria to be correlated with WPC test scores and high school grades. Consistent with earlier studies unless a criterion overlapped with predictors, that is, essentially measured intellectual achievement (such as having earned a B. A. degree), such nonintellective, nongraded outcomes of the educational experience cannot be predicted from the measures currently used to predict college success.

Bureau of Testing Project: 0468-100

Prediction of Post-High School Educational Experiences from an Aptitude/Achievement Test Battery

Patricia W. Lunneborg

University of Washington

May 1970

Before launching a search for nonintellective predictors to expand the present Washington Pre-College (WPC) test battery the need for such a search must be adequately demonstrated. Two previous attempts (Lunneborg, Lunneborg, & Greenmun, 1970, in press) at predicting nonintellective criteria of community college study with the present battery were extremely disappointing. While the battery continued to account for a sizable proportion of variance whenever the criterion was grade point average, it could not predict job satisfaction, utility of college for employment, satisfaction or emotional reaction to the community college two to four years later, nor could it predict a host of personal experiences and perceived college characteristics collected during the first year at college. Only when there was an obvious link between predictors and criteria was even a modest amount of predictability noted, e.g., the traditional battery correlated fairly highly with transfer to a four-year college, and the interest tests of CEEB's Comparative Guidance and Placement (CGP) battery bore reasonable relationships to choice of college major. This study is the third and last to assess the relationship or lack thereof between educational criteria other than grades and the WPC battery.

Some years ago nonintellective predictors in the form of biographic variables demonstrated incremental validity in predicting intellective criteria, GPA's (Lunneborg & Lunneborg, 1966), prompting the adoption in 1969 of a

standard biographic sheet by WPC on which students routinely record father and mother's education, number of siblings, educational goal, high school subjects most and least enjoyed, etc. While the relationships of these variables to the nonintellective criteria enumerated above have not yet been studied, it is anticipated that these biographic predictors will have to be supplemented with reliable scales to measure personality, interests, motivation, work values, etc., if prediction in this new direction is to succeed.

Method

In summer 1969 a questionnaire regarding post-high school education was mailed with postage-paid, return envelopes to 2,150 high school graduates in 1965 of eight metropolitan Seattle Schools (Bothell, Franklin, Garfield, Lake Washington, Nathan Hale, Sealth, Shorecrest, Tyee). All of these students had taken the WPC test battery autumn 1964. The 597 completed questionnaires which had been received by October 1969 provided the data for the present study (315 questionnaires were returned undeliverable). This sample contained 54% females and was 17.1 years old when tested. The mailing was conducted to locate subjects for another study of intellectual growth.

After coding and keypunching of questionnaire data by clerks, the post-high school experiences were correlated with the standard WPC battery of 12 test scores and 6 high school GPA's.

Summary of Results

Compared with community college norms (Lunneborg & Lunneborg, 1967) this sample was above average on all tests and in high school grades as indicated by percentile equivalents of mean scores at the end of Table 1. Perhaps for

this reason 70% said they had gone on to four-year colleges, 25% had continued at two-year schools. The average number of college credits, four years after high school graduation, was 120--in the middle of the junior year. Forty-four percent said they would be in college autumn 1969; 33% had bachelor's degrees. Forty percent acknowledged "education or training since high school somewhere other than college;" 21% had had on-the-job training while 14% of the total sample had attended an armed forces school.

Predictability of post-high school educational experiences from aptitude test scores and high school grades was poor (Table 1). The best item was choice of a four-year school to begin college studies, with verbal abilities apparently most important: .52 with HS English GPA and .38 and .36 with English usage and Vocabulary respectively. This aptitude/achievement battery also could be said to have accounted for a moderate amount of variance in total amount of college credit earned, earning a B. A. degree, extent of educational goal (ranging from no college to doctor's degree), and student status during each of the succeeding years. Although the correlation coefficients stayed close to zero negative correlations between the battery and various kinds of noncollege training, employment, and housewife status were strikingly consistent.

With the above exceptions the survey had little to do with the precollege battery. The important items of satisfaction with earnings, occupational interest group, current and projected in 10 years, and occuptional level were unpredictable. Unless the criterion overlapped with the predictors, i.e., measured intellectual achievement, the educational experience was unrelated to the measures currently in use to differentially predict college success.

Table 2 presents a summarization of the responses of this sample to the item:

Have you had further education or training since high school somewhere other than college?

Apprenticeship program?_____ In what trade?_____

Hospital nursing program?_____ What hospital?_____

Business or secretarial school?_____For how long?_____

Other professional or job related school?_____

What job?_____

Armed forces school?_____ What speciality?_____

On-the-job training?_____ For what job?_____

For how long?_____

The listings of actual apprenticeship programs, armed forces schools, etc., in which this sample participated have been grouped according to Anne Roe's eight occupational interest areas (for later use in presenting the results of the WPC Vocational Interest Inventory to high school students). Note this listing is incomplete--it does not say what is available in post-high school education, but what was experienced by these 597 individuals.

Table 1

Correlations between Post-High School Education and Precollege Aptitude/Achievement Variables

(Decimal points omitted)

Educational variables	Aptitude/achievement variables																	
	EU	SP	RC	MR	SA	AM	RS	VO	DS	QJ	FR	MA	Engl GPA	Lang GPA	Math GPA	NSci GPA	SSci GPA	Elec GPA
No. schools att'd	02	07	07	04	07	-01	11	06	03	-01	06	00	03	-04	00	02	05	-00
First school 4-yr	38	24	30	07	16	28	05	36	23	33	21	34	52	38	40	42	49	35
First school 2-yr	-36	-24	-27	-03	-15	-27	-03	-34	-22	-32	-18	-31	-51	-42	-38	-41	-45	-38
Total credit earned	29	17	25	12	18	29	03	27	24	33	19	33	45	29	39	36	49	31
In college fall '69	06	05	14	13	05	12	01	12	07	18	07	15	07	08	10	12	09	03
Assoc. Arts degree	-16	-10	-12	01	-01	-10	-01	-13	-07	-09	-07	-06	-08	-05	-05	-05	-05	-03
B. A. degree	28	17	22	09	16	27	01	25	20	29	15	28	35	25	31	30	38	25
No. dif. majors	12	13	19	14	15	15	11	20	10	19	09	16	18	17	19	19	21	07
Extent of educ. goal	27	13	30	24	25	34	07	33	26	39	20	35	30	20	30	34	36	23
Recency of completion	-08	-01	-09	-08	-13	-10	-04	-08	-05	-10	-09	-07	06	03	-03	-00	03	04
Noncollege training	-14	-12	-09	04	-00	-10	02	-10	-13	-14	-04	-09	-23	-18	-13	-14	-21	-12
Apprenticeship	-05	-04	-00	-07	-13	-04	02	-04	-07	-06	-02	-04	-06	-06	-05	-05	-06	-02
Hosp. nursing	-03	-01	-03	-09	-04	-07	04	-05	-08	-07	-07	-06	03	-00	02	01	02	00
Bus./sec. training	-05	-06	-02	-12	-07	-09	-04	-04	-07	-11	-04	-10	-08	-07	-07	-11	-11	-08
Job-related training	-04	-06	-06	-03	-07	-09	03	-02	-09	-14	-13	-13	-06	-08	-11	-06	-09	-02
Armed forces training	-17	-15	-13	24	09	-01	-06	-12	00	01	04	05	-27	-17	-12	-13	-20	-18
On-the-job training	-07	-06	01	-00	03	-09	10	-02	-12	-11	01	-05	-11	-10	-08	-06	-11	-04

Table 1

Correlations between Post-High School Education and Precollege Aptitude/Achievement Variables (cont'd)

		EU	SP	RC	MR	SA	AM	RS	VO	DS	QJ	FR	MA	Engl GPA	Lang GPA	Math GPA	NSci GPA	SSci GPA	Elec GPA
Student	1965-66	21	10	14	06	15	17	06	20	13	19	12	21	28	17	24	28	32	21
	1966-67	21	07	18	05	15	21	02	20	19	24	11	24	34	23	30	27	38	26
	1967-68	21	15	21	08	15	22	04	24	19	26	14	25	34	19	28	26	38	25
	1968-69	21	14	20	12	14	25	-02	22	22	28	17	28	34	23	31	27	36	17
Housewife	1965-66	-05	-02	-03	02	-02	-01	-02	00	-01	-01	-04	-02	-01	-08	-04	-03	01	-02
	1966-67	-01	01	-07	00	-08	00	-04	-04	-00	-04	-04	-01	-03	-00	-04	03	-02	-06
	1967-68	-05	-03	-10	-05	-08	-11	-00	-07	-06	-11	-10	-09	-08	-04	-12	-10	-13	-09
	1968-69	-01	-01	-04	-10	-09	-09	07	-00	-06	-12	-09	-11	-05	-07	-12	-10	-08	00
Employed	1965-66	-16	-07	-12	-04	-09	-14	-06	-16	-12	-13	-07	-18	-26	-12	-22	-23	-29	-17
	1966-67	-16	-06	-13	-03	-10	-17	-02	-14	-16	-19	-07	-20	-30	-18	-25	-23	-33	-20
	1967-68	-16	-12	-15	-06	-10	-16	-03	-18	-16	-20	-08	-20	-27	-14	-20	-17	-28	-18
	1968-69	-18	-14	-15	-07	-08	-14	-06	-19	-14	-16	-05	-16	-23	-14	-19	-14	-23	-13
Current Roe job level		-07	-06	-03	14	-07	-08	-06	-01	-03	-01	-07	00	-13	-08	-05	00	-11	-09
Satisf. wi earnings		-01	00	-09	-01	-06	-08	-06	-06	-06	-07	-07	-05	-06	-04	-02	-02	-02	00

Table 1

Correlations between Post-High School Education and Precollege Aptitude/Achievement Variables (cont'd)

	EU	SP	RC	MR	SA	AM	RS	VO	DS	QJ	FR	MA	Engl GPA	Lang GPA	Math GPA	NSci GPA	SSci GPA	Elec GPA
10-yr job level	-07	-03	-09	02	-08	-06	-02	-09	-07	-05	-04	-04	-05	-05	-07	-06	-08	-13
Current Roe group																		
1 Service	00	-07	-01	-03	-03	-07	-00	03	-05	-04	-05	-07	-04	-05	-02	-05	01	-06
2 Bus contact	-05	-00	-02	05	-01	01	-00	-03	-02	02	06	01	00	-03	-02	-02	-05	03
3 Organization	01	02	-02	-17	-09	-12	01	-00	-11	-15	-07	-13	-03	-03	-07	-06	-06	-03
4 Technology	-04	-03	-05	26	07	08	-01	-04	10	11	05	13	-13	-04	-02	-04	-06	-02
5 Outdoor	00	01	03	05	04	07	-05	04	06	07	06	09	00	00	07	07	08	04
6 Sciences	-02	04	02	-05	-02	01	11	-03	03	03	04	02	07	06	04	08	06	03
7 Gen'l cult	14	09	04	-09	01	03	-09	06	05	02	-04	01	18	13	09	10	14	09
8 Arts & ent	-00	-01	03	-04	-02	-01	01	01	-04	-03	-04	-06	02	-06	-01	05	01	05
10-yr Roe group																		
1 Service	04	-07	05	-03	-03	-02	08	03	-02	-08	-03	-07	01	-07	-03	-00	02	-08
2 Bus contact	-09	-05	-09	-04	-07	-03	-02	-10	-04	-05	-03	-08	-04	-05	-06	-06	-09	-04
3 Organization	-12	-08	-08	05	-04	00	03	-08	-02	-03	-04	-03	-17	-16	-12	-11	-10	-07
4 Technology	-05	-03	-09	19	10	05	-03	-09	03	09	10	11	-10	00	06	-04	-08	-02
5 Outdoor	-00	-07	-02	06	01	00	-00	-01	04	03	06	05	-07	-03	02	01	04	02
6 Sciences	02	07	13	12	08	12	11	07	10	12	11	18	11	13	18	14	11	06
7 Gen'l cult	16	11	08	-14	-01	-01	-11	14	03	00	-04	-02	19	15	07	09	13	13
8 Arts & ent	-01	-02	-01	-10	-07	-08	-01	03	-09	-05	-05	-09	01	-06	-05	-01	01	03
Community college percentile of mean score	70	70	75	55	65	75	65	75	--	--	--	80	80	80	7:	75	75	70

Table 2

ROE CLASSIFICATION OF OCCUPATIONS ACCORDING TO POST-HIGH SCHOOL EDUCATION REQUIRED AND AVAILABLE

	Group I: Service (attending to the personal tastes, needs and welfare of others through guidance, domestic, personal and protective services)	Group II: Business contact (face to face personal persuasion to sell commodities, services, investments; all sales occupations except routine clerks)
ON-THE-JOB AND APPRENTICE TRAINING	Cook Food service helper Police officer Waitress	Insurance salesman Tupperware salesman Real estate salesman Sales training
JOB-RELATED SCHOOLS AND TECHNICAL INSTITUTES	Beautician Caterer Cosmetologist Lifeguard Police officer Stewardess	
ARMED FORCES TRAINING SCHOOLS	Cook Cooking instructor Driver Military policeman Psychiatric aide Security officer	
TWO-YEAR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS	Law enforcement officer	
FOUR-YEAR COLLEGE MAJOR PROGRAMS	Caseworker Occupational therapist Physical therapist Speech therapist	Insurance salesman Public relations consultant, worker Real estate salesman Sales manager
POST-BACCALAUREATE DEGREE PROGRAMS	Child guidance specialist Clinical psychologist School counselor Social worker Special educator Vocational counselor	

Table 2

ROE CLASSIFICATION OF OCCUPATIONS ACCORDING TO POST-HIGH SCHOOL EDUCATION REQUIRED AND AVAILABLE

Group III: Organization (managerial, ownership, or white collar job in business, industry, or government)

ON-THE-JOB AND APPRENTICE TRAINING	Accountant Auditor Bank clerk Buyer Cashier Claims adjuster	Clerk Clerk-typist Estimator Executive File clerk Mail sorting machine operator	Office manager Personnel manager Postal clerk Receptionist Restaurant manager Secretary	Statistical clerk Stenographer Stewardess Telephone operator Theater manager
JOB-RELATED SCHOOLS AND TECHNICAL INSTITUTES	Airlines clerk Auditor Keypunch operator Receptionist Secretary	Telephone operator Teller		
ARMED FORCES TRAINING SCHOOLS	Administration Air transport clerk Clerk Clerk-typist Inventory manager	Personnel worker		
TWO-YEAR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS	Bookkeeper Business administrator Hotel manager Office clerk	Restaurant manager Secretary		
FOUR-YEAR COLLEGE MAJOR PROGRAMS	Accountant Actuary Advertising manager Airport manager	Business administrator Buyer Lumber broker Market researcher	Office manager Personnel manager Radio station manager	Stockbroker Transportation manager
POST-BACCALAUREATE DEGREE PROGRAMS				

Table 2

ROE CLASSIFICATION OF OCCUPATIONS ACCORDING TO POST-HIGH SCHOOL EDUCATION REQUIRED AND AVAILABLE

Group IV: Technology (concerned with production, maintenance, and transportation of commodities and utilities)

ON-THE-JOB AND APPRENTICE TRAINING	Aircraft electrician Aircraft maintenanceman Aircraft mechanic Bus driver Computer operator Construction worker Draftsman	Electrician Electronics technician Engineering aide Glazier Heavy equipment operator Machinist	Mechanic Meat wrapper Metalsmith Painter Photography lab technician Press operator	Radio TV repairman Telephone serviceman Teletypist Teller Toolmaker Truckdriver
JOB-REIATED SCHOOLS AND TECHNICAL INSTITUTES	Computer programmer Draftsman Electronic assembler			
ARMED FORCES TRAINING SCHOOLS	Aircraft maintenanceman Aircraft mechanic Auto mechanic Aviation electrician Computer operator	Electronics technician Engineer Helicopter pilot Hydraulic technician Lineman	Mechanic Navigator Radar technician Radio operator Radio repairman	Teletype operator Truckdriver Yeoman
TWO-YEAR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS	Aircraft mechanic Auto mechanic Commercial baker Electronics technician Engineering aide	Oceanographic aide		
FOUR-YEAR COLLEGE MAJOR PROGRAMS	Building contractor Civil engineer Computer programmer Electrical engineer	Mechanical engineer Mining engineer Naval officer Nuclear engineer		
POST-BACCALAUREATE DEGREE PROGRAMS				

Table 2

ROE CLASSIFICATION OF OCCUPATIONS ACCORDING TO POST-HIGH SCHOOL EDUCATION REQUIRED AND AVAILABLE

Group V: Outdoor (agricultural, fishery, forestry, mining, and kindred occupations)		Group VI: Science (scientific theory and its application under specified circumstances other than technology)	
ON-THE-JOB AND APPRENTICE TRAINING	Fisherman Horse trainer Sawmill operator Seaman	Dental assistant Nursing technician Veterinary assistant X-ray technician	
JOB RELATED SCHOOLS AND TECHNICAL INSTITUTES		Dental assistant Medical assistant Nurse	
ARMED FORCES TRAINING SCHOOLS	Surveyor	Dental assistant hygienist, technician Medical technician	
TWO-YEAR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS	Forest technologist	Dental assistant, hygienist Medical technologist Nurse	
FOUR-YEAR COLLEGE MAJOR PROGRAMS	Fisheries biologist Forester Forest manager Wildlife biologist	Bacteriologist Geologist Home economist Mathematician Medical technologist	Nurse Optometrist Pharmacist Sociologist
POST-BACCALAUREATE DEGREE PROGRAMS		Dentist Physician Physicist Professor, science Public health scientist	Research scientist (chemist, microbiologist, psychologist, etc.) Veterinarian

Table 2

ROE CLASSIFICATION OF OCCUPATIONS ACCORDING TO POST-HIGH SCHOOL EDUCATION REQUIRED AND AVAILABLE

Group VII: General cultural (preservation and transmission of general cultural heritage)		Group VIII: Arts and entertainment (use of special skills in creative arts, entertainment, or sports)	
ON-THE-JOB AND APPRENTICE TRAINING		Commercial artist Disk jockey Graphic illustrator Interior decorator Photographer Ski instructor	
JOB-RELATED SCHOOLS AND TECHNICAL INSTITUTES	Interpreter Radio-TV broadcaster	Commercial artist Interior designer Model Photographer	
ARMED FORCES TRAINING SCHOOLS		Photographer	
TWO-YEAR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS		Fashion designer	
FOUR-YEAR COLLEGE MAJOR PROGRAMS	Clergyman Community college teacher Editor Journalist Librarian Newspaper editor School teacher (elem.& secondary)	Actor Apparel designer Architect Artist Art teacher Athletic coach Drama teacher	Interior decorator Musician, symphony Music teacher Novelist Photo journalist Urban planner
POST-BACCALAUREATE DEGREE PROGRAMS	Lawyer		

References

Lunneborg, C. E., & Lunneborg, P. W. Community college norms (1963-1965) for the Washington Pre-College (WPC) test battery and high school grades. Seattle: Bureau of Testing, University of Washington, 1967. (Duplicated)

Lunneborg, C. E., Lunneborg, P. W., & Greenmun, R. Prediction of multiple aspects of the community college experience. Measurement and Evaluation in Guidance, 1970, 2, 234-242.

Lunneborg, P. W., & Lunneborg C. E. The differential prediction of college grades from biographic information. Educational and Psychological Measurement, 1966, 26, 917-925.

Lunneborg, P. W., Lunneborg, C. E., & Greenmun, R. An attempt at predicting long-term, nonintellective indices of community college study. Educational and Psychological Measurement, in press.